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PRACTITIONERS' CORNER

LE COIN DES PRATICIENS

Diabetes mellitus in a 3-year-old, intact, female guinea pig

Janice Vannevel

A 3-year-old, female guinea pig (*Cavia porcellus*), weighing 898 g and in good health and body condition, was presented for blood in her urine. She was also having pain and 'squeaking' on urination, and urinating small amounts frequently. Cystitis was suspected but urine was unavailable. Radiographs were negative for the presence of cystic calculi. She was treated with trimethoprim/sulfa and responded. Two months later, she again had symptoms of cystitis. Urine was obtained by placing her in a clear plastic container and collecting urine from the box after she had urinated spontaneously (She strongly resisted cystocentesis).

Urine analysis revealed numerous white blood cells, red blood cells, bacteria, and glucose greater than 111 mmol/L. The guinea pig resisted restraint, making blood collection difficult. A small amount of blood was obtained by jugular venipuncture or toe nail clip on several occasions. At all times, the blood glucose was greater than 24 mmol/L (normal, 3.3 to 7 mmol/L (1)). Urine glucose remained at greater than 111 mmol/L. A diagnosis of diabetes mellitus was made.

Treatment was attempted with enrofloxacin (Baytril, Bayer, Etobicoke, Ontario), 5mg/kg BW, PO, q24h, and the oral hypoglycemic glyburide at 0.625 mg, PO, q24h. The blood glucose responded slightly, initially, decreasing to 15 mmol/L, but after a month, returned to 24 mmol/L. Chlorpropamide (Apo-chlorpropamide, Apo-tex, Weston, Ontario) was then tried; a 100-mg tablet was mixed in 4 mL of water and one drop added per ounce of drinking water. This amount was increased over a few weeks to 3 drops per ounce. At this time, the blood glucose in early morning was 9.8 mmol/L. Over the next 2 mo, the blood glucose again increased to the pretreatment level of 23.6 mmol/L. Oral hypoglycemics were discontinued and NPH insulin (Novolin, Novo Nordisk Canada, Mississauga, Ontario), 1.0 IU, q12h, was begun, using a Novolin insulin pen (Novo Nordisk Canada). It had a peak effect at 6 h after injection; however, the glucose decreased to only 15.9 mmol/L. Insulin was increased to 2.0 IU in the morning, but 1.0 IU in the evening. We were reluctant to increase the insulin dramatically, because the guinea pig was very stressed when in the hospital, so it was felt that the hospital blood glucose levels were probably elevated compared with what they would be at home. In the hospital, the blood glucose at peak effect was 11 mmol/L.

The owner is able to monitor the urine glucose and ketones at home by placing the pig in the plastic box. By being rewarded for urinating with a small amount of lettuce, the sow has quickly learned that she can get a treat and be allowed out of the box by urinating. The ketones have remained negative. The urine glucose in the evening is trace. Since starting the insulin, the guinea pig has had only one more episode of cystitis, which was resistant to trimethoprim/sulfa but sensitive to enrofloxacin.

The importance of this case is that it demonstrates the necessity of a urine analysis in all instances of cystitis. It also demonstrates that guinea pigs can respond to human NPH insulin, with a possible peak effect at 6 h and duration of effect of approximately 12 h. Some owners may be able easily to monitor the pig's urine and give the insulin injections.

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